Assessing Capacity Development Needs in Africa for Aviation Meteorology Services

ICAO – EASTERN AND SOUTHERN AFRICAN
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By

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WORLD METEOROLOGICAL ORGANIZATION

Introduction

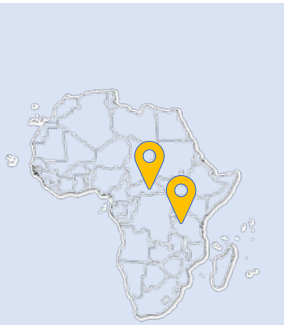
- Recent developments show that African States are increasingly creating enabling and conduci ve environment for development in civil aviation.
- Aeronautical meteorology service provision in Africa is still growing and requires support in m any aspects
- In our discussion with Members, including in the Recent RAI Session with Directors of meteo rology in Africa, there exists many gaps in the provision of aviation meteorological services

Why is weather important to aviation sector?

Because it's intrinsically linked with aviation **Safety, Efficiency, Economy and Environmental Protection**.

Such phenomenon as **snow, fog and thunderstorms** affect flying often causing **disruptions** in the industry

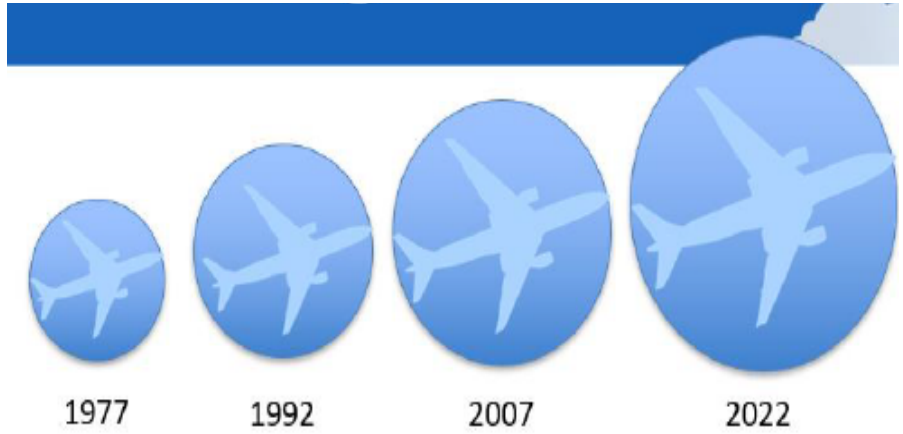
The weather factor on flying



- Over the past 10 years, **hazardous weather conditions** have consistently been one of t he **TOP THREATS** to aviation, including the effect of:
  - *Thunderstorms, poor visibility, gusty wind/wind shear, Tropical cyclones,*
  - *Wind and turbulence, Temperature and humidity, Visibility,*
  - *Clouds and convection, Precipitation, Volcanic eruptions etc.*

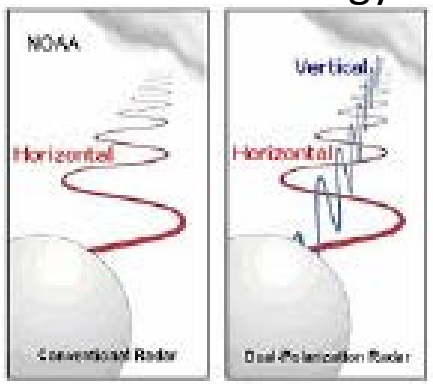
Global air transport **has doubled every 15** years since 1977

With over **3 billion passengers** annually …….and **with USD 6 trillion value of air** Cargo annually



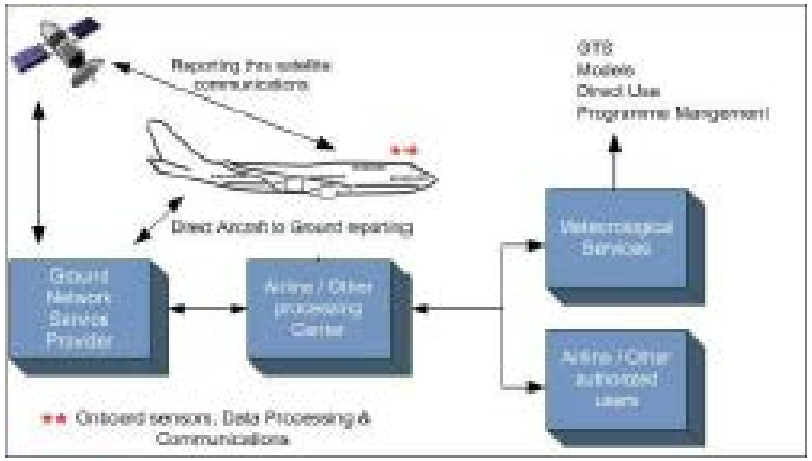
Advances in observing methods and use of observations

Radar technology



Ground-based instruments

Aircraft-derived MET data including moisture

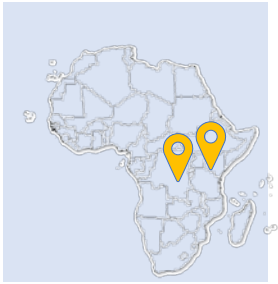


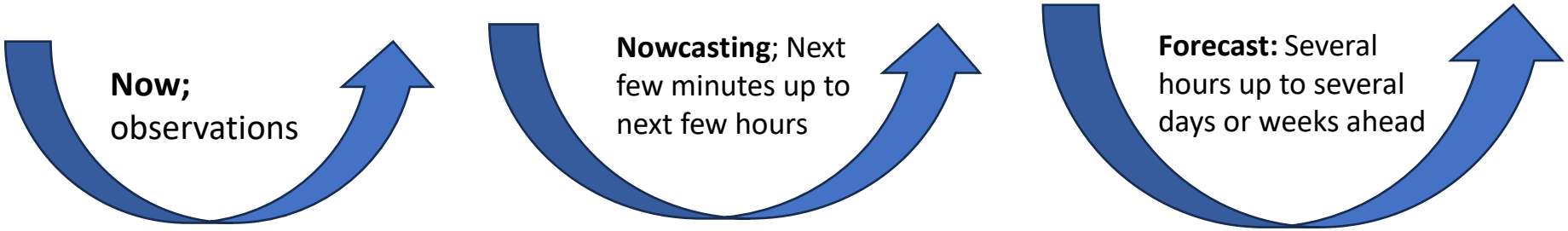
Geostationary satellites

Radio soundings

Challenges related to provision of aviation meteorological services ;

- **Infrastructural needs** to data collection, processing and dissemination for Aviation Met service users **(nowcasting and forecasting)**





- **Challenges related to Quality management Systems;**

  A total of 32 members (66%) presently require support to implement QMS in their Avia tion Met services to ensure quality service delivery. Of the 32 Members identified for s upport, **20 have no QMS at all whiles 12 had QMS in part** covering some aspects

  Several NMHSs are yet to migrate from ISO 9001:2008 to ISO: 9001:2015, although effo rts are being undertaken towards this.

❖ **Challenges related to Cost recovery efforts;**

- Cost recovery in aeronautical meteorological services will ensure improved service deliv ery such as upgrading of infrastructural facilities and supplementing government effort

However, this is low in the region and requires;

- Developing a prototype methodology and model for cost recovery that can be easily ado pted by Members.
- Support in form exchange programs for peer learning and sharing of experiences to lever age on Members with best practices.
- Support in development of legislation, and guidelines towards the implementation of co st recovery for aeronautical meteorological services to Member

❖ **Challenges related to competencies**

- Member States require personnel and system competencies in line with WMO and ICAO standards as relates to education and training of meteorological personnel providing ser vice for international air navigation.
- Support in this area is a continuous need.

❖ Challenges related to establishing Meteorological Watch offices

Lack of sufficient equipment for optimum operation as required by WMO and ICAO standards. Key among the missing equipment include:

- **Doppler radar systems** for weather observation and monitoring
- Office Workstations such as Synergie Forecasting Systems
- **SADIS (Satellite Distribution System)**; that makes available meteorological data for intern ational air navigation

  SADIS delivers World Area Forecast System (WAFS) products such as;

  - gridded upper air forecasts, significant weather (SIGWX),
  - METAR, SPECI, TAF, SIGMET, AIRMET, GAMET
  - Volcanic Ash Advisories (VAA),
  - Tropical Cyclone Advisories (TCA) and
  - Space Weather forecasts

  However, the migration is underway and members are encouraged to take action as for the futur e support of SADIS will be stopped.

- **Modern nowcasting systems** required for forecasting rapidly developing weather systems that affect aircraft operations such as: fog, thunderstorms, icing, turbulence
- **Pilot web briefing systems**
- **Automated Weather Observing Systems**
- Low Internet provision and connectivity on the continent for communication and rapid data exc hange.

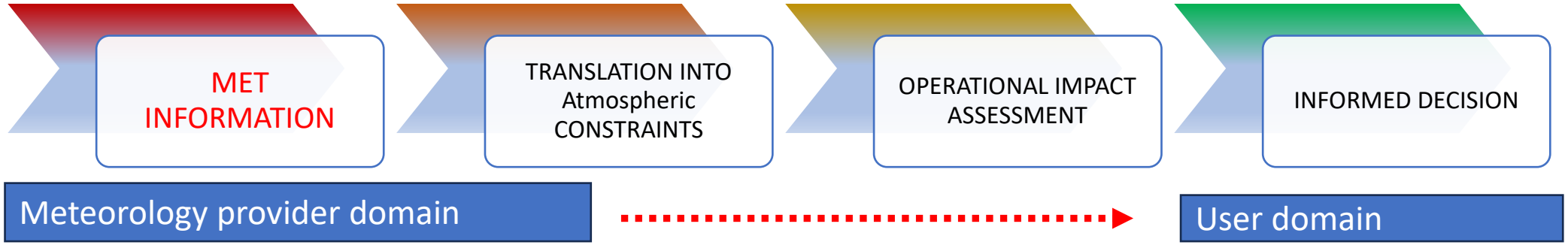
❖ **Challenges related to OPMET (Operational Met) Data**

- Unavailability of OPMET data (due to inadequate infrastructure such as Aeronautical Message H andling System (AMHS) not working/unavailable , lack of training on dissemination of OPMET

❖ **Need for development of the Aircraft Meteorological DAta Relay (AMDAR) program to enroll more airlines**

- A few airlines in Africa are participating in AMDAR program these are Kenya Airways and South Africa airlines.
- There is need to enroll more airlines.
- We are in talks with Ethiopian Airlines to have them enrolled in the program. ET has one of the l argest fleet in the continent.

❖ Challenges related to the provision of impact-based forecasts



❖ Challenges related to policy and regulatory frameworks

- WMO/ICAO should bring together NMHSs and CAA/Directors, Administrators of Meteorology and Po licy Makers and capacitate them on policy requirements for provision of aeronautical met services.
- How do we take advantage of the existing Regional structures, and develop structures that may enh ance capacity at National level?
- How can we take advantage of integrated meteorological strategy for Africa through AMCOMET

Working with Civil Aviation Authorities.

- Civil Aviation Authorities are the biggest beneficiaries and users of aviation met services from NMHSs.
- In few cases, there exists MoU and operational agreements of a working relationship.
- How can we share good practices and enhance collaboration at national level?

WMO partnerships are key

Primary

International Civil Aviation Organization

Meteorology — METP

Environment — CAEP

Economics — AEP-ANSEP

Subsidiary bodies (working groups)

Working arrangements with WMO since 1954 – update imminent!

Secondary

IATA

IFALPA

IUGG

IAEA
International Atomic Energy Agency

CTBTO
PREPARATORY COMMISSION

Working arrangements or agreements with WMO

Tertiary

IFATCA

ACI
AIRPORTS COUNCIL INTERNATIONAL

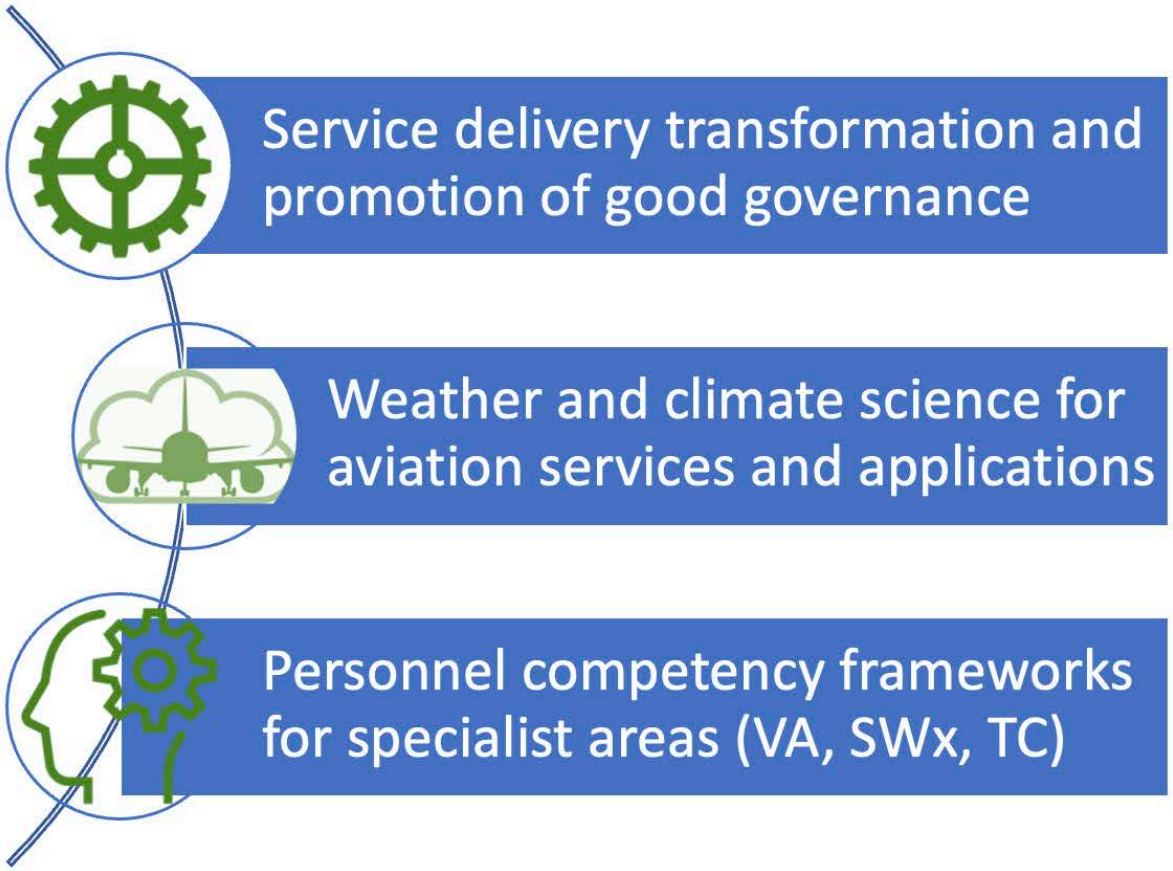
canso
civil air navigation services organisation

EASA
European Union Aviation Safety Agency

EUROCONTROL

...among others!

WMO key focus areas 2024-2027



Areas of concern

Climate change and a warming of the atmosphere will likely bri ng about changes in **global circulation patterns**, increasing **fre quency, and intensity of extreme weather events** and will imp act aviation meteorological services

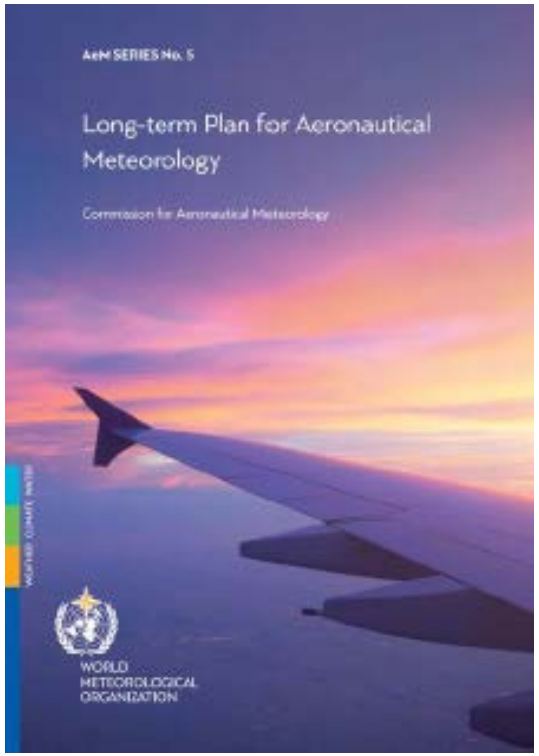
This may affect flight safety in the air and therefore calls for inc reased research in this area.

Key to the success of Aeronautical Meteorological Services is t he ability to sustain stakeholder's confidence in service deliver y and quality of products offered for air navigation purposes.

Need to consistently improve aviation forecasts products

Alternative technologies that are relatively cheaper and cost ef fective are highly needed

WMO Long-term plan for AeM



https://www.wmo.int/aviation/services/long-term-plan

Useful links with information from WMO

1. Services for Aviation homepage with information on some of the activities in WMO to support aviation Met. services.

2. We recently updated 2 guides, including WMO-No. 904 on cost recovery and WMO-No. 732 on services for aviation.

3. We have also improved Aero Met Personnel competency and qualification requirements and

4. We are in the process of a two-stage discontinuation of WMO-No. 49, Volume II.)

Thank you.

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